

CONTAINER CONVEYOR LOAD TRANSFER

[0001] The present invention relates to the transfer of standard load containers between adjacent locations such as dockside positioned cranes and land-based vehicles.

STATEMENT OF GOVERNMENT INTEREST

[0002] The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefore.

BACKGROUND OF THE INVENTION

[0003] Current arrangements for transfer of containers to and from dockside located marines vessels or ships involve use of a relatively large marine terminal crane. In large sea ports, delivery and retrieval of containers from the marine terminal crane is a bottleneck so as to require use of additional equipment and time consuming container transfer, leading to a line up of delivery vehicles awaiting container pickup. It is therefore an important object of the present invention to provide a method and apparatus for more efficient and less time consuming transfer of containers between a marine terminal crane and land based vehicles such as trucks and railroad trains.

SUMMARY OF THE INVENTION

[0004] Pursuant to the present invention, a single container transfer conveyor of a suitable length has a roller track formed thereon by aligned sections respectively underlying wheeled crane units of the conveyor to which such track sections are respectively connected for transfer of containers therebetween. The central crane unit features a prepping platform through which containers of different sizes on its roller track section may be adjustably positioned in alignment under the spreader bar of a marine terminal crane for vertical transfer of containers to and from the conveyor after the containers are delivered to and from a pair of end crane units through which parallel spaced lanes are established on opposite sides of the central platform unit for passage of trucks with containers thereon. Containers are transferred by laterally slidable spreaders between the trucks and the roller track sections associated with the end crane units without obstruction.

BRIEF DESCRIPTION OF DRAWING

[0005] A more complete appreciation of the invention and many of its attendant advantages will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawing wherein:

[0006] FIG. 1 is a side elevation view of an assembled conveyor loader constructed in accordance with one embodiment of the present invention;

[0007] FIG. 2 is a bottom elevation view of the conveyor loader illustrated in FIG. 1;

[0008] FIG. 3 is a perspective view of the conveyor loader illustrated in FIGS. 1 and 2, with containers positioned therein and in underlying relation to a terminal crane spreader; and

[0009] FIG. 4 is an end view of the conveyor loader shown in FIG. 3, with containers therein.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

[0010] Referring now to the drawings in detail, FIGS. 1 and 2 illustrate through side and bottom elevation views a conveyor loader 10 before transfer thereto of three containers 12, 14 and 16 as shown positioned thereon in FIGS. 3 and 4, illustrating the conveyor loader 10 at a location in underlying alignment with a spreader bar 18 depending from a conventional type of marine terminal crane generally known in the art. The conveyor loader 10 as shown in FIGS 1-4 has two end crane units 20 and 22 interconnected by a prepping platform type of central crane unit 24. Each of such conveyor crane units 20, 22 and 24 has a roller track section 26, 28 and 30 respectively secured to the bottom portions thereof in alignment with each other so as to establish a common roller path 31, as denoted in FIG. 2, along which movement of containers may be guided during travel between the conveyor crane end units 20 and 22 to and from the central crane unit 24.

[0011] Each of the conveyor crane units 20, 22 and 24 is of a similar construction having wheel support. Thus, the end crane units 20 and 22 have rectangular top frames 32 and 34 from which gantry legs 36 extend downwardly to lower ends on which wheels 38 are mounted for travel surface support of the end crane units 20 and 22 with their top frames 32 and 34 in horizontal alignment with each other at an upper level as shown in FIG. 4. Such top frames 32 and 34 are of a width greater than that of a top frame 40 associated with the central crane unit 24 positioned at a lower level below the horizontally aligned top frames 32 and 34 of the end crane units 20 and 22 as shown in FIGS. 1 and 3. Gantry legs 42 extend downwardly from the top frame 40 of the central crane unit 24, with wheels 44 mounted thereon for travel surface support of the central crane unit 24 with the horizontal top frames 32 and 34 of the end crane units 20 and 22, projecting laterally in opposite directions from the top frame 40 of the central crane unit 24 as

shown in FIGS. 2 and 3. A pair of parallel spaced travel lane paths 46 and 48 as designated in FIG. 2 are thereby established underlying the top frames 32 and 34 for load transport trucks, such as the motor truck 50 as shown in FIG. 3 having the container 12 positioned on its chassis. The width dimensions of the end crane units 20 and 22 established by their top frames 32 and 34 relative that of the top frame 40 of the central unit 24 is such as to accommodate passage of the trucks 50 along the travel paths 46 and 48 past opposite sides of the central unit 24 with the container 12 or 16 thereon.

[0012] Each of the end crane units 20 and 22 also has a stack spreader 52 slidably suspended from its top frame 32 and 34 by a spreader support element 54 slidably displaceable laterally along the width of the top frame 32 and 34 between track bars 56. Thus, the container 12 attachable to the spreader 52 may be displaced between a position overlying the truck 50 and the roller track 26 supported by wheels 58 as shown in FIGS. 3 and 4 to establish the roller track travel path 46 or 48 as shown in FIG. 2.

[0013] The top frame 40 of the central unit 24 has a pair of alignment hopper guides 60 adjustably mounted thereon through which containers of different size, such as the smaller container 14, may be vertically transferred by the crane spreader bar 18 between a marine terminal crane and the roller track section 30 associated with central crane unit 24. As shown in FIGS. 2 and 3, such roller track section 30 has recesses 62 at selected locations thereon to accommodate lock installation and removal.

[0014] It will be apparent from the foregoing description that the conveyor loader 10 provides two truck lanes along the travel paths 46 and 48 for use of the crane units 20, 22 and 24 so as to substantially reduce the time required for transfer of different sized containers to and from a truck chassis. The central crane unit 24 is positioned in alignment under the crane

spreader bar 18 by movement of the conveyor loader 10 aided by use of the hopper guides 60. Furthermore, the two longer containers 12 and 16 of a 40-foot length for example may be off-loaded at the same time from the roller track formed by the three track sections 26, 28 and 30. A different length container 14 of a shorter 20-foot length for example as shown in FIG. 3 may also be handled with the central crane unit 24 positioned as the prepping platform.

[0015] Obviously, other modifications and variations of the present invention may be possible in light of the foregoing teachings. It is therefore to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

What is claimed is: